AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

Please amend the Claims as shown below:

1. (currently amended) A method for hashing, comprising:

storing a plurality of partial keys in memory;

applying a hash function to an original key to generate a hash value, wherein said hash function comprises any polynomial;

accessing the memory according to the hash value;

reading a partial key from the memory ~~corresponding~~ that corresponds to ~~the~~ said hash value, wherein said hash value is based on said original key;

executing a conflict check by comparing a partial key derived from an incoming full key with the partial key stored in the memory.

2. (previously presented) The method of Claim 1, wherein the partial key from the memory corresponding to the hash value includes saved bits comprising a consecutive, sequential string of bits, less than or equal to N, which is part of the original key.

3. (previously presented) The method of Claim 2, wherein the partial key from the memory corresponding to the hash value comprises a number of bits equal to or more than the number of bits of the original key minus the number of bits of the hash value.

4. (original) The method of Claim 1, wherein the hash function is implemented by a linear feedback shift register.

5. (previously presented) The method of Claim 1 further comprising applying a reverse function on the partial key from the memory corresponding to the hash value and hash value to generate the original key.

6. (original) The method of Claim 1 further comprising the steps of:

reading a result from the memory corresponding to the hash value;

forwarding a packet of data according to the result read from the memory.

7. (previously presented) A hashing apparatus, comprising:

a memory which stores a plurality of partial keys used to determine hashing conflicts;

a hash function block coupled to a memory that applies any polynomial to a full key and generates a hash value which is used to point to one of the plurality of partial keys stored in the memory, wherein the partial keys include saved bits comprising a consecutive, sequential string of bits derived from the original key.

8. (original) The hashing apparatus of Claim 7, wherein the memory comprises a 2^N hash table size.

9. (previously presented) The hashing apparatus of Claim 7, wherein the one of the plurality of partial keys stored in the memory comprises a number of bits equal to or more than the number of bits of the original key minus the number of bits of the hash value.

10. (original) The hashing apparatus of Claim 7, wherein the hash function block comprises a linear feedback shift register.

11. (original) The hashing apparatus of Claim 9, wherein the linear feedback shift register corresponds to a Galois version.

12. (original) The hashing apparatus of Claim 9, wherein the linear feedback shift register corresponds to a Fibonacci version.

13. (previously presented) The hashing apparatus of Claim 7 further including a reverse function generator coupled to the memory, wherein the reverse function generator generates the original key based on the one of the plurality of partial keys stored in the memory and hash value.

14. (previously presented) The hashing apparatus of Claim 7 further comprising a forwarding engine coupled to the memory, wherein the forwarding engine forwards a data packet according to information read from the memory at an address corresponding to the one of the plurality of partial keys stored in the memory.

15. (currently amended) A hashing apparatus comprising:

means for storing a plurality of partial keys in memory;

means for applying a hash function to an original key to generate a hash value, the hash function comprising any N bit polynomial;

means for accessing the memory according to the hash value, wherein a position to save comprises any N consecutive bits;

means for reading a partial key from the memory corresponding to the hash value and based on the original key, wherein a size to save comprises $\leq N$ bits;

means for executing a conflict check by comparing a partial key derived from an incoming full key with the partial key stored in the memory, wherein the memory comprises a 2^N hash table size.

16. (original) The hashing apparatus of Claim 15, wherein saved bits comprise a consecutive, sequential string of bits which is part of the original key.

17. (previously presented) The hashing apparatus of Claim 16, wherein the partial key from the memory corresponding to the hash value comprises a number of bits equal to or more than the number of bits of the original key minus the number of bits of the hash value.

18. (original) The hashing apparatus of Claim 15, wherein the hash function is implemented by a linear feedback shift register means.

19. (previously presented) The hashing apparatus of Claim 15 further comprising means for applying a reverse function on the partial key from the memory corresponding to the hash value and hash value to generate the original key.

20. (original) The hashing apparatus of Claim 15 further comprising:
means for reading a result from the memory corresponding to the hash value;
means for forwarding a packet of data according to the result read from the memory.

21. (canceled)

22. (canceled)

23. (canceled)

24. (canceled)

25. (canceled)

26. (currently amended) A method for accessing data, comprising:
storing a plurality of partial keys in memory;
applying a function to an original key to generate a value;
accessing the memory according to the value;

reading a partial key from the memory corresponding to the value <u>and based on the</u> <u>original key</u>;

comparing the partial key to the value in determining which data is accessed;

applying a reverse function on the partial key and value to generate the original key.